

BEFORE AN EXPERT PANEL

FTAA-2512-1158

UNDER the Fast-track Approvals Act 2024 (“the FTAA”)
IN THE MATTER of an application by **Precinct Properties New Zealand Limited** for approvals under the FTAA for a listed project, The Downtown Carpark Redevelopment – Te Pūmanawa o Tāmaki (“**Application**”)

**STATEMENT OF HAI AN NGUYEN-BUI REGARDING QUALIFICATIONS
AND EXPERIENCE**

DATED: 12 MAY 2026

ELLIS GOULD
LAWYERS
AUCKLAND

REF: Douglas Allan [REDACTED]

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**STATEMENT OF HAI AN NGUYEN-BUI REGARDING
QUALIFICATIONS AND EXPERIENCE**

1. My full name is Hai An Nguyen-Bui. I am an Associate Geotechnical Engineer at CMW Geosciences New Zealand Limited, based in Hamilton New Zealand.
2. Along with my colleagues Gaurav Raj Mathur and Dr Martin D. Larisch, I prepared the report dated 1 May 2026 (**“the Report”**) regarding geotechnical aspects of the application under the Fast Track Approvals Act 2024 by Precinct Properties New Zealand Limited (**“the Applicant”**) for the Downtown Carpark Redevelopment, Auckland CBD – Te Pūmanawa o Tāmaki (**“the Application”**). The Report was written by me, reviewed by Mr Mathur, and authorised by Dr Larisch. It was filed with the Panel by email on 7 May 2026 on behalf of Millennium & Copthorne Hotels New Zealand Limited. I am authorised to make this statement on behalf of Mr Mathur and Dr Larisch, who have confirmed its accuracy to me.
3. I have the following qualifications and experience relevant to the matters addressed in the Report:
 - (a) MSc Geological Engineering, Civil Engineering and Environmental Sciences, Université de Bordeaux, France (2012).
 - (b) MSc Geological Sciences (Structure and Evolution of the Lithosphere), Université de Montpellier, France / Università di Roma, Italy (2004).
 - (c) BSc Geological Sciences and Geotechnics, Université de Paris 6, France (2003).
 - (d) I have over 14 years of experience in New Zealand and France in geotechnical and civil engineering including: geotechnical design; project management; construction support; and technical leadership for urban developments, underground infrastructure and retaining structures and heritage rehabilitation projects in dense urban and sensitive environments. I am fluent in English and French.

4. The relevant qualifications and experience of my colleagues Mr Mathur and Dr Larisch are set out in **Attachment A** and **Attachment B** respectively to this supplementary statement.
5. While the Report has not been prepared in the form of evidence to be presented at a hearing, I confirm that, subject to the caveat set out in paragraph 5 below:
 - (a) We have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2023 and have complied with the requirements in the Code of Conduct in preparing the Report.
 - (b) Except where we state that we are relying on material provided by another person, the Report is within our collective areas of expertise.
 - (c) We have not omitted to consider material facts known to us that might alter or detract from the opinions expressed in this evidence.
6. Prior to preparing the Report we read the Application and supporting documentation on the Environmental Protection Agency's Fast Track website. We also made site visits and attended meetings with representatives of the Applicant to discuss the Application and its potential to adversely affect the MSocial Hotel owned and operated by Millennium & Copthorne Hotels New Zealand Limited.

Dated this 12th day of May 2026



Hai An Nguyen-Bui – Associate Geotechnical Engineer

ATTACHMENT A

Gaurav Raj Mathur (PMP, BE Civil, Geotechnical)

Auckland,
New Zealand

Phone: [REDACTED]

Email: [REDACTED]



PROFILE



Gaurav possesses a comprehensive background in **geotechnical engineering, encompassing design, site management, and project leadership**. With a distinguished career spanning diverse geotechnical projects, he has cultivated a deep-rooted expertise in **planning, executing, and monitoring site investigations and instrumentation**. Gaurav's ability to develop innovative solutions and adapt to evolving industry practices has been instrumental in his success.

His recent focus has been on leading engineering teams to deliver sustainable and practical geotechnical solutions for complex projects. A proficient user of industry-standard software such as **Slide, Slope W, Rocfall, Allpile, Wallap, Plaxis, SeepW, FoSSa, Geo5, Liquefy-pro**, and specialized finite element packages, Gaurav brings a robust technical foundation to his work.

Gaurav's project experience is extensive and globally diverse. He has played key roles in major infrastructure developments, including the **Auckland Light Rail, City Rail Link, and Central Interceptor** in New Zealand; the **Doha Red Line South and Gold Line Metro** projects, and the **Local Roads & Drainage Programme** in Qatar; and **large-scale slope stabilization** projects in India. His practical **tunnelling** expertise, honed on projects such as the HATS 2A in Hong Kong, complements his broader skill set. Additionally, Gaurav has contributed to the **Perth City Link** Project and various **resources** industry endeavours.

Gaurav is a certified Project Management Professional (PMP), demonstrating his ability to lead and manage projects effectively. Throughout his career, Gaurav has demonstrated a strong commitment to quality and efficiency, as evidenced by his involvement in the supervision and management of geotechnical and geophysical works for the Local Roads & Drainage Programme and the Red and Gold metro lines in Doha, as well as his quality assurance role in the construction of the Seawall at Koolan Island.

- **EDUCATION**

Bachelor of Engineering in Civil, [Auckland University]

- **NATIONALITY**

New Zealand Citizen and Passport Holder

- **Educational Institutions Attended**

Auckland University (2002 - 2006)

CAREER HISTORY

May 2024 to Present

CMW Geosciences NZ Ltd

Office Manager

- Lead and manage the Auckland office (45 Staff)
- Establishment of client relationships
- Management of project resources and budgets.
- Lead Business development
- Explore new areas of growth
- Establish CMW as key player in the NZ Geotechnical space

Principal Engineer,

- Technical Lead in the NZ geotechnical team
- Establishment and review of geotechnical designs and reports
- Provide on-site geotechnical design solutions
- Assessments of slopes and geotechnical hazards
- Business development
- Mentoring of team members

April 2020 to May 2024

Arup NZ Ltd

Geotechnical Team Leader

- Client/PMC/Project management
- Report Writing
- Team resource management (20 Staff)
- Budgeting and team utilisation

Project Manager and Lead Engineer, KiwiRail Recovery Works,

- Lead the NZ geotechnical team
- Establishment and review of geotechnical designs and reports
- Provide on-site geotechnical design solutions
- Assessments of slopes and geotechnical hazards

Lead Engineer, Bay Area Rapid Transport (BART),

- Lead the NZ geotechnical team
- Establishment and review of geotechnical parameters
- Provide review support

Team Lead, Auckland Light Rail (ALR),

- Lead the alliance geotechnical team
- Planning of ground investigations
- Client/ Contractor /Project management
- Planning and resourcing of teams
- Set design direction for design
- Coordination with other regional offices
- Mentoring of engineers

Project Coordinator, Parcel D KVMRT 3

- Participate and contribute to the design underground stations and tunnels
- Client/ Contractor /Project management
- Planning and resourcing of teams
- Review of design and drawings for IFC
- Coordination with other regional offices

Central Interceptor

CPS Manager – Design & Engineering

- Participate and contribute to the design of shafts & retaining walls

- Client/ Contractor /Project management
- Planning and resourcing of teams
- Instrumentation and Monitoring
- Site Investigations
- Slope stability design
- Reporting from Preliminary to detailed design
- Coordination with other disciplines.
- Mentoring of engineers

March 2019 to April 2020

Tonkin & Taylor

City Rail Link – NAL West Design Manager

- Participate and contribute to the concept design of retaining walls
- Client/ Contractor /Project management
- Planning and resourcing of CAD
- Reporting for design Stages A, B, & C
- Coordination with other disciplines
- Mentoring of Graduate engineers

December 2017 to March 2019

Terre Armee India Pvt LTD

National Manager – Design & Engineering

- Participate and contribution to forming and updating Indian Standards and Codes
- Client/ Contractor /Project management
- Managing approximately 30 team members
- Planning and resourcing management on the National level
- Undertaking a QA/QC on all systems and designs
- Undertake training of staff
- Develop processes for reporting and documentation

September 2017 to December 2017

Geodata India Ltd

Senior Geotechnical Expert AGAKGC Lucknow Metro

- Client/ Contractor /Project management
- Report/Drawing/Method Statement reviews
- Resource management
- Solving issues (Design/Site)

January 2014 – August 2017

WS Atkins Global

Design Co-ordinator (Civil Engineering Disciplines)

- Client/PMC/Project management
- Report Writing
- Resource management
- Solving issues (Design/Site)
- Incident investigations
- Environmental monitoring

Senior Geotechnical Engineer/GEC Team Leader (Geotechnical)

- Client/PMC/Project management
- Report Writing
- Team resource management
- Sub-contractor Liaising
- Instrumentation and Monitoring
- Site Investigations
- Slope stability design

Senior Geotechnical Engineer, Red Line South Metro Line Doha

- Tunnel Length: 13.8 km Twin bored tunnel (TBM operations)
- Scoping and management of the geotechnical investigations for the tunnel and station alignments to support the construction of the Metro Line for the QDVC Joint Venture.
- Production of Geotechnical Interpretive Reports, design of D-Walls, piles, settlement calculations, Instrumentation and Monitoring plans,
- Geo-Physical survey and reporting.
- Sub-contractor Liaising
- Further responsibilities included management of the Geo technical team and implementation of services and co- ordination of investigations and activities

April 2012 – January 2014

Gammon Construction Ltd

Project Geologist / Geotechnical Engineer

- Raisebore Mapping and assigning Support
- Harbour Area Treatment Scheme 2A (HATS 2A), Tunnel face mapping
- Rock analysis using NATM
- Assigning Tunnel support systems
- Testing of installed support
- Monitoring/Supervising of Pre-Excavation Grouting
- Instrumentation Monitoring and reporting
- Implementation of Tablet PC for use on site for Mapping, data recording, signing of paper work
- Rockfall (Rocscience) analysis
- Unwedge (Rocscience) analysis.

June 2010 – April 2012

GHD Pty Ltd Australia

Senior Geotechnical Engineer

- BHP Billiton Mt Whaleback Newman, Tunnel Ventilation Upgrade Investigation and design using Geo5 Settlement, Newman, Australia
- Pile Design and analysis using Oasys Pile/AllPile for Perth City Link Project
- Southdown Design-Feasibility Study, Wellstead
- Walkington Theatre remediation investigations and recommendations, Karratha, Australia
- Port Haven Accommodation Facility Expansion, Port Hedland, Australia
- Bridges 760,762 and 763 pier design/upgrade, MRWA Northam, Australia
- Koolan Island Seawall Construction, Senior Site Construction Engineer, Australia.
- BHP Billiton Mt Whaleback Newman Hub-road Upgrade Investigation and design, Newman, Australia
- Southdown Pre-Feasibility mine study, Wellstead, Australia.
- BHP Billiton Area C Packsaddle Tunnel Design and Facility Upgrade, Australia.
- BHP Billiton Shay Gap Aerodrome Upgrade, Geotechnical Investigations. Australia
- High Street, Fremantle Wall and slope stability analysis using SlopeW and Slide software for MRWA and City of Fremantle, Perth.
- Leinster WWTP, analysis of existing ponds and solutions, Shire of Leinster, Australia.
- Rio Tinto, Lake Macleod Autowash facility upgrade, Carnarvon, Australia.

- WIDC, Geotechnical Investigation and design for Department of Immigration and Citizenship Australia, Northam, Australia.
- Project Management
- Ground Stability analysis using Slide.
- Foundation design
- Site Inspections and Monitoring
- Report Writing
- Client Communication/Relationships
- Site Management

Oct 2009 – May 2010

Civil Quality Assurance Pty Ltd, Brisbane
Geotechnical Engineer

- Slope Stability Assessment of Compton Road Exit using Slide Software, Gateway motorway, Brisbane
- Pavement rehabilitation for Moreton Bay Regional City Council, Brisbane
- Pile design and analysis for various residential and commercial buildings.
- MathCAD software programming and development of codes to use for general everyday design
- Design of Crib walls.
- Project Management
- Ground Stability analysis using Slide.
- Foundation design
- Site Inspections and Monitoring
- Report Writing
- Client Communication/Relationships
- Site Management

Mar 2007 – Oct 2009

Aecom New Zealand Ltd, Auckland
Geotechnical Engineer

- Haywards and Benmore Sub Station Upgrades, Transpower NZ
- Haripur Power Station (Bangladesh)
- Port Botany (Sydney) design verification and design check.
- Grain storage facilities foundation design and analysis
- Glenfield Road Stage 3&4 retaining wall designs and Construction monitoring.
- Pile design and analysis for Al Raha Development in UAE.
- NT1 550Mw tunnel design and stability analysis using Slide and Fossa. Rock mass analysis. Project in Laos.
- Design of Massbloc retaining wall along State Highway 20 to 1 link, New Zealand
- Design and inspections of main transmission lines for Transpower New Zealand Ltd
- Design for Kawakawa Hospital Foundations New Zealand
- mathCAD software programming and development of codes to use for general everyday design
- gINT software programming
- Design of Crib walls.
- Design of Retaining wall on SH25
- Cable route Assessments for 400kV North Island Grid Upgrade
- Project Management
- Ground Stability analysis using Slide and Liquefaction Pro.
- Foundation design
- Handling of projects VMS Design along SH-1

Nov 2005 - Mar. 2007

Foundation Engineering Ltd, Auckland.

Engineering Technician

- Overlooked all filling operations at Sir Barry Curtis Park, checking compaction rates using an NDM to meet design specifications
- Hand auger and Machine hole core Logging
- Carried out stability investigations for various residential and some commercial subdivisions
- Site Inspections
- Setup Data logger for Geotechnical testing for the New Zealand Accredited Geotechnical Laboratory
- Report Writing

SKILLS AND ABILITIES

- Team Work
- Honest
- Reliable
- Good Leader
- Co-operative
- Good Listener
- Organized
- Tidy
- Problem solving skills in computers and general work.
- Ability to communicate clearly in groups.
- Time Management.

REFEREES

Provided upon request.



Dr Martin D Larisch

PILING, BASEMENT & GEOTECHNICAL DESIGN/ CONSTRUCTION EXPERT

Martin is a Piling, Basement and Geotechnical Expert with over 25 years of international design and construction experience. For almost two decades he worked in various technical and operational leadership roles for some of the largest geotechnical companies in Australia, New Zealand and Germany.

Since 2018 he has worked as a Principal Geotechnical Consultant for some of the leading design firms in Australia and New Zealand and was responsible for the design/ design certification of many complex projects involving piling, ground improvement and retaining walls in Australia and the APAC Region.

Martin is currently based in the Wellington Region, New Zealand, where he is mainly responsible for the independent design review and certification of complex ground engineering, piling, ground improvement and retaining wall schemes for some large and complex infrastructure projects in New Zealand, Australia, the South Pacific and Asia.

Martin has also provided independent advisor and expert witness services for several complex piling, geotechnical and ground engineering related disputes for projects in Europe, Asia, New Zealand and Australia.

From 2014 to 2021 he was appointed Adjunct Associate Professor at the Geotechnical Engineering Center at The University of Queensland, Brisbane.

Martin has authored more than 30 technical publications for journals and international conferences and has participated in various committees and working groups to amend/ develop industry guidance involving piling works:

- Engineers Australia/ AGS nominee for the revision of Australian Standard CE-032 **Earth Retaining Structures**, AS4678 (2025 – ongoing)
- Expert panel member to revise the **New Zealand Piling Specification**, New Zealand Geotechnical Society (2020 – ongoing),
- Working group member to develop a '**Guide for Working Platforms**', EFFC/ DFI (2023 – ongoing)
- Working group member to develop/ update a '**Guide to Tremie Concrete for Deep Foundations**', EFFC/ DFI (2018 – ongoing)
- Working group member *Recommended Practice* '**Tremie Concrete for Deep Foundations**', Concrete Institute of Australia (2010 – 2012)

Relevant Employment History (from 2012 until now)

Since June 2023: Director (Owner)

(Larisch Consulting Ltd, Waikanae, NZ)

Responsibilities: Provision of independent expert services for geotechnical and ground engineering disputes, including deep and shallow foundations, retaining structures, ground improvement and slope stability.

Provision of independent peer reviews of geotechnical, basement and pile designs for clients in New Zealand, Australia and Asia.

Provision of more than 100 technical training courses about piling, ground improvement and retaining wall design/ construction in the APAC Region.

EDUCATION/QUALIFICATIONS

PhD, *Geomechanics*, The University of Queensland, Australia

M.Sc., *Advanced Concrete Technology*, University of Leeds, UK

Graduate Certificate, *Risk Management*, Swinburne University of Technology, Australia

Dipl.-Ing., *Civil Engineering*, University of Hildesheim, Germany

REGISTRATIONS/ CERTIFICATIONS

Fellow with Engineering New Zealand (FEngNZ, CPEng)

Producer Statement Author for Auckland City Council (High-Risk)

Fellow with Engineers Australia (FIEAust)

Registered Professional Engineer of Queensland (RPEQ)

EXTRA-CURRICULAR ACTIVITIES AND AFFILIATIONS

EA/ AGS Nominee AS4678 Revision

Expert Panelist for SESOC/ NZGS Piling Specifications

Member of the NZGS Management Committee (2023 – 2025)

ISSMGE memberships (NZGS):

- TC211 Ground Improvement
- TC212 Deep Foundations

SELECTED PUBLICATIONS

Larisch, MD, Johnstone, G. and Damen, R., 2020, '*Temporary working platforms – Technical Guidance on New Zealand Good Practice*', Proceedings of 21st NZGS Geotechnical Symposium, March 2021, Dunedin, New Zealand

Larisch, MD, 2019, '*Concrete defects in bored piles as a result of insufficient applications of chemical admixtures*', NZ Concrete Industry Conference, Oct 2019, Dunedin, NZ

Larisch, MD, 2018, '*Current practice of CFA piling in Australia and New Zealand*', Proceedings on the International conference on Deep Foundations and Ground Improvement, June 2018, Rome, Italy

Larisch, MD, 2016, '*Tremie concrete and its influence on waterproofing performance of basements*', The NZ Concrete Industry Conference, Oct 2016, Auckland, New Zealand

Larisch, M., D., Williams, D., J. and Scheuermann, A. 2015, '*Influence of pile installation techniques on heave volumes in clays*', 12th ANZ Conference on Geomechanics, Feb 2015, Wellington, New Zealand

Larisch, MD, Kelly, R and Muttuvel, T 2015, Chapter 21: Improvement of soft soils by drilled displacement columns', Ground Improvement Case Histories, Elsevier (Oxford)

Larisch, M., D., 2009, '*High tension load transfer using bored piles for SOUL Apartments*', Surfers Paradise', AGS journal, Vol 44, 1 March 2009

LANGUAGES

English, German (fluent)

OTHER

- 25 years of experience in Geotechnical and Civil Engineering
- Based in Wellington, New Zealand
- Australian & German citizen

Relevant Employment History (from 2012 until now)

2020 – 2023: Principal & Technical Leader for Ground Engineering NZ (Jacobs Engineering, Wellington, New Zealand)

Responsibilities: Provision of technical leadership and risk management for ground engineering aspects of projects and proposals. Undertaking of geotechnical designs, design verification, specification development, value engineering and constructability aspects to major infrastructure and marine projects and key proposals across New Zealand, Australia and Asia.

Geotechnical Design Lead and Geotechnical Lead Reviewer roles for various large and complex infrastructure projects in New Zealand and Australia.

2019 – 2020: Principal Geotechnical Engineer (Golder Associates Pty Ltd, Brisbane, Australia)

Responsibilities: Provision of technical leadership for geotechnical and ground engineering proposals and projects of various high-profile infrastructure and building projects in Australia and New Zealand, especially for effective and safe geotechnical designs and constructability aspects.

2016 – 2018: Geotechnical Engineering Manager (The Fletcher Construction Company FCC, Auckland, New Zealand)

Responsibilities: Provision of technical leadership, risk management, value engineering and R&D to the company's operations across New Zealand and the South Pacific. FCC is the largest construction company in New Zealand.

Development and growth the geotechnical engineering team within the Fletcher Construction group to provide high quality in-house design and design verification services to support projects and bids across the company.

Internal expert for the assessment, remediation and repair of defective piles and other deep foundation structures (e.g., diaphragm walls, anchors, etc.).

2012 – 2014: National Technical & Quality Manager (Piling Contractors Pty Ltd (now Keller Australia P/L), Brisbane, Australia)

Responsibilities: Provision of technical and engineering leadership to support the company's operations across Australia and New Zealand.

Member of Keller's Global Technology Committee (GTC) for piling, heavy foundations and ground improvement and initiation of various technology transfer projects between Australia, Europe and North America.

2014 - 2021: Adjunct Associate Professor (Geotechnical Engineering) (The University of Queensland, St Lucia, Brisbane, Australia)

Facilitation of invited lectures, seminars and workshops in geotechnical engineering, piling, ground improvement, concrete technology, and risk management.

Supervision of PhD and Master Students.

Relevant Experience Infrastructure New Zealand

Eastern Busway Alliance, Auckland, New Zealand

Client: Auckland Transport

Title: Lead Geotechnical Reviewer/ Verifier (Alliance)

Start/End Dates: since May 2021 (**ongoing**)

Scope/Description: The \$920M infrastructure project will provide greater connectivity to Botany, Pakuranga and the surrounding suburbs in Auckland.

Responsibilities: Design verification of various piled bridge foundations supported by reinforced concrete bored piles ranging from 1.2 m to 3.0 m in diameter and 30 m in depth with up to 10 m rock sockets in moderately weathered sandstone to withstand moderate earthquake loading.

In addition, more than 25 retaining wall schemes including MSE walls, post and panel walls and block walls have been designed for the project.

River Link, Hutt City, Wellington Region, New Zealand

Client: New Zealand Transport Agency (NZTA) and Hutt City Council

Title: Geotechnical/ Pile Constructability Advisor (Alliance)

Start/End Dates: since May 2023 (**ongoing**)

Scope/Description: The \$600M alliance project is a flood protection and river restoration project which also includes the design and construction of two bridges across the Hutt River and one bridge to cross State Highway SH2 at the Melling Interchange.

Responsibilities: Methodology development to construct the bridge pier piles for the new 4-lane Melling Road Bridge, to be constructed on 2.7 m diameter monopiles (permanently lined reinforced concrete bored piers) up to 30 m deep for the mitigation of severe earthquake loading.

Waikato Expressway, Hamilton, New Zealand

Client: New Zealand Transport Agency (NZTA)

Title: Geotechnical Engineering Manager (Fletcher Construction)

Start/End Dates: March 2016 until Aug 2018

Scope/Description: The \$600M 'Construct only' Hamilton section which commences with the Ngaruawahia section in the north and connects to the existing Tamahere interchange deviation south of Hillcrest.

Piled foundations for the 11 bridges included reinforced concrete bored piles of 1.2 m in diameter and up to 65 m depth as well as bottom driven permanently cased driven steel piles up to 40 m depth.

Responsibilities: Provision of technical advice for deep foundation works for 11 bridges, including the execution of dynamic pile load testing using PDA and CAPWAP.

Relevant Diaphragm Wall Projects (New Zealand & Australia)

Commercial Bay, Auckland, New Zealand

Client: Precinct Properties

Title: Geotechnical Engineering Manager (Fletcher Construction)

Start/End Dates: Mar 2016 until Aug 2018

Scope/Description: \$1 billion commercial high-rise building with 39-storeys and a 3-level basement located in Auckland's CBD, next to the harbor.

Responsibilities: Provision of technical advice for the design and installation of the diaphragm wall (24 panels of up to 25 m depth and 0.6 m thickness), ground anchors (permanent and temporary) and sheet piles.

Temporary works design for the Zurich House underpinning, various platforms and ramps as well the 'stub' walls (CFA secant piles) for the two tunnel connections.

Development of advanced concrete mix designs to improve water proofing performance of the basement structure (diaphragm wall)

MHX Kirkbride, Auckland, New Zealand

Client: NZTA – New Zealand Transport Agency

Title: Geotechnical Engineering Manager (Fletcher Construction)

Start/End Dates: March 2016 until May 2018

Scope/Description: The \$160M alliance project was a road improvement project to upgrade SH20A to form a strategic link between SH20 and SH16, the Airport Business District and the greater Auckland area.

Responsibilities: Technical and engineering support for the construction of the diaphragm wall (56 panels of up to 30 m depth and 0.8 m thickness) for the retention of the underpass. The diaphragm wall was installed in challenging ground conditions containing soft soils and peat layers.

Airport Link, Brisbane, Australia

Client: Thiess/ John Holland JV (THJV)

Title: Project Manager (Bauer/ Piling Contractors JV)

Start/End Dates: Mar 2009 until March 2010

Scope/Description: \$4.8 billion Airport Link tunnel in Brisbane (6.7km long). The scope of works included the construction of the TBM launching pit.

Responsibilities: Construction of more than 200 diaphragm wall panels of 1.0 m and 1.2 m thickness with lengths varying from 2.8 m to 7.1 m and depth from 15 m to 40 m to suit the underlying rock profile for the TBM launching pit. Glass Fiber Reinforcement (GRP) was used for the TBM breakout points.

Installation of approximately 40 barrettes to provide resistance to uplift forces and foundations to the ventilation building.

Relevant Experience Infrastructure Australia

Alkimos Desalination Plant, Perth, WA, Australia

Client: Water Corporation WA

Title: Independent Geotechnical Design Reviewer (Alliance Design Team)

Start/End Dates: since February 2024 (**ongoing**)

Scope/Description: The project involves the design, construction, operation and maintenance of the Alkimos Seawater Desalination Plant (ASDP) near Perth for a period of ten years (stage 1). The plant will have an initial capacity of 150,000 m³ per day, with an additional 150,000 m³ per day for stage 2.

Responsibilities: Independent review of various geotechnical designs including the design of the proposed launching shaft for the Tunnel Boring Machine (TBM), which is a 'peanut-shaped' secant-piled structure with temporary propping and 20 m excavation depth. Independent check of the design using an alternative 3D finite element analysis.

Sydney Metro West – The Bays Station, NSW, Australia

Client: Acciona/ Ferrovial JV (Tunneling Contractors)

Title: Geotechnical Reviewer Design JV (Station Box Design & Specification)

Start/End Dates: January 2022 until December 2022

Scope/Description: Sydney Metro West is \$25b project which involves a new 24-kilometre metro line with stations at Westmead and the Sydney CBD. The Bays station Box is also the launching station for the TBM and is about 150 m (long) x 30 m (wide) x 25 m (deep).

Responsibilities: Review of the station box design (diaphragm wall & secant piled wall) including lateral support by multiple rows of ground anchors.

Development of construction specifications using 1,200mm diameter secant piles and 1m thick D-walls of 35 m depth for excavation depths up to 25 m.

Kingsford Smith Drive Upgrade, Brisbane, Australia

Client: Brisbane City Council

Title: Principal Geotechnical Engineer (CPS for Design Consortium)

Start/End Dates: June 2019 to August 2019

Scope/Description: The \$850M infrastructure project involved the widening of the existing Kingsford Smith Drive from four to six lanes to improve traffic flow from Brisbane's CBD to the airport.

Responsibilities: Review of the construction methodologies for ground improvement works, especially the installation of jet **grouting columns** to minimize construction/ installation effects to existing infrastructure.

On site observation and verification of jet grouting works for more than 100 jet grouting columns of up to 20 m depth and 1.2 m in diameter, installed in soft soil conditions. Review of jet grouting trial, installation parameters, coring results, grouting backflow material during construction.

Relevant Experience Marine Piling (APAC Region)

Dampier Bulk Handling Facility, Dampier, Western Australia

Client: Pilbara Port Authority (PPA)

Title: Construction support and verification of marine and land-based piles

Start/End Dates: March 2025 - ongoing

Scope/Description: The construction of the new \$285M Port of Dampier bulk handling facility involves the design and delivery of a new land-backed wharf and dredging of a 280 m long, 13 m deep berth pocket. The wharf is supported by 54 tubular steel piles of 1,200 mm in diameter; each pile is drilled 3.6 m into granite bedrock with up to 100 MPa strength.

Responsibilities: CPS works to support the design team with attendance of two static pile load tests (uplift and lateral testing).

IRex (Island Resilient Connection Program, Wellington, New Zealand

Client: Kiwi Rail

Title: Geotechnical Design Lead Seawalls and Piling (Design Consortium)

Start/End Dates: Feb 2022 until Dec 2023

Scope/Description: The Inter Islander Ferries provide a critical connection between New Zealand's North and South Island crossing the 22km wide Cook Strait about 4,000 times every year. The \$1.45B project includes the purchase of two new ferries of 295m length and the upgrades of both terminals in Wellington and Picton to increase passenger and car capacities and to comply with the latest seismic requirements.

Responsibilities: Delivery of the geotechnical seawall (combi-walls) and pile designs for both, terminals and wharfs in Wellington and Picton to accommodate the new, 295 m long ferries, considering static, impact and severe earthquake loading. Development of piling specifications, pile load testing schemes and pile constructability advice for marine piles and seawalls.

LNG Terminal Extension, Batangas, Philippines

Client/ Owner: FGEN LNG Corporation (FGEN)

Title: Design Review Lead Jetty Extension (for Jacobs on behalf of owner)

Start/End Dates: Dec 2023 until March 2023

Scope/Description: The Multi-Purpose Jetty is located adjacent to the existing jetty and will be capable of receiving liquid fuel carriers and LNG carriers. The new US\$300M jetty structures comprise a total of 212 no of tubular steel piles of 1.5 m in diameter up to 65 m in length. The superstructure comprises of fabricated steel jackets and deck/ trestle modules.

Responsibilities: The scope included the independent development of the ground model, the review of the selected site-specific seismic hazard/ earthquake loading conditions (moderate), the assessments of the geotechnical and structural pile designs (including liquefaction assessments) as well as the structural checks of the deck structures.

